

RECEIVED  
CENTRAL FAX CENTER

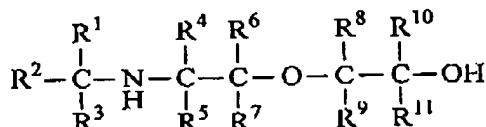
APR 14 2009

U.S. Serial No. 10/587,207  
 Amendment Under 37 CFR 1.312  
 Family Number: P2004J003

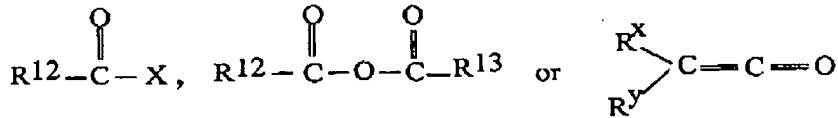
Page 2

AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for the synthesis of severely sterically hindered secondary aminoether alcohols of the formula



wherein R<sup>1</sup> and R<sup>2</sup> are each selected from the group consisting of alkyl, hydroxylalkyl radicals having 1 to 4 carbon atoms or in combination with the carbon atom to which they are attached they form a cycloalkyl group having 3 to 8 carbon atoms, and R<sup>3</sup> is selected from the group consisting of hydrogen, alkyl or hydroxylalkyl radicals having 1 to 4 carbon atoms, and R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup> and R<sup>11</sup> are the same or different and are selected from the group consisting of hydrogen, alkyl and hydroxylalkyl radicals having 1 to 4 carbons provided that at least one of R<sup>4</sup> or R<sup>5</sup> bonded to the carbon atom directly bonded to the nitrogen atom is an alkyl or hydroxylalkyl radical when R<sup>3</sup> is hydrogen, the process involving reacting an acid halide or organic carboxylic acid anhydride, a ketene, or mixture of any two or of all three thereof, of the formula

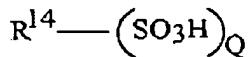


wherein R<sup>12</sup> and R<sup>13</sup> are the same or different and each is selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, aryl radicals bearing hydrogen or C<sub>1</sub>-C<sub>10</sub> alkyl groups substituted thereon, and mixtures thereof, X is halogen selected from the group consisting of F, Cl, Br, I, and mixtures thereof, and R<sup>X</sup> and R<sup>Y</sup> are the same or different and are selected from the group consisting of hydrogen, alkyl radicals having 1 to 4 carbon, aryl radicals bearing substituents selected from the group consisting of hydrogen and one or more alkyl radicals, and mixtures thereof, or R<sup>X</sup> and

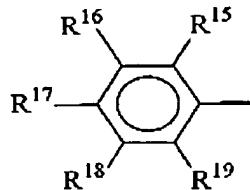
U.S. Serial No. 10/587,207  
 Amendment Under 37 CFR 1.312  
 Family Number: P2004J003

Page 3

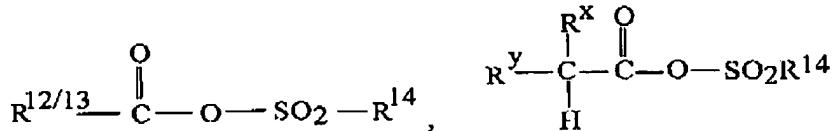
$R^y$  in combination with the carbon to which they are attached form a cycloalkyl radical having 3 to 8 carbons, with an organic sulfonic acid of the formula



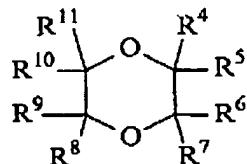
wherein Q is an integer selected from 1 to 4,  $R^{14}$  is selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, haloalkyl radicals of the formula  $C_nH_{(2n+1)-z}X_z$  wherein n is 1 to 4, X is selected from the group consisting of F, Cl, Br, I, and mixtures thereof, and z ranges from 1 to 5, aryl radicals of the formula



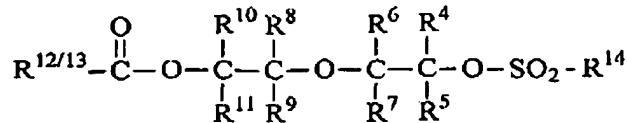
wherein  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$ , and  $R^{19}$  are the same or different and are selected from hydrogen and alkyl radicals having 1 to 20 carbon atoms, and mixtures thereof, to yield an acyl sulfonate of the formula



or mixtures thereof, which is then reacted with a dioxane of the formula

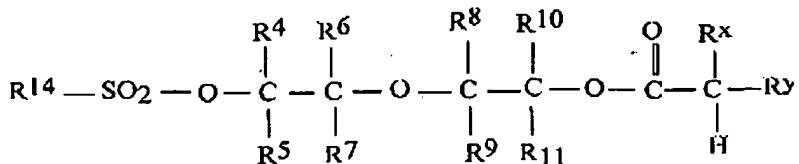


wherein  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$ ,  $R^{10}$ , and  $R^{11}$  are the same or different and are selected from hydrogen, alkyl and hydroxyalkyl radicals having 1 to 4 carbons to yield

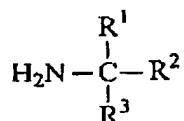


U.S. Serial No. 10/587,207  
 Amendment Under 37 CFR 1.312  
 Family Number: P2004J003

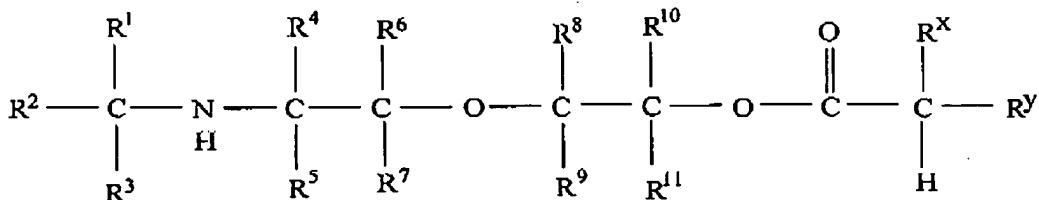
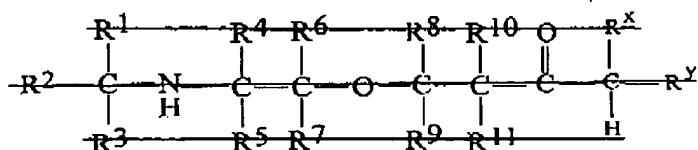
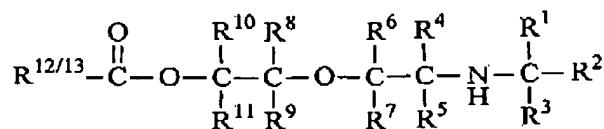
Page 4



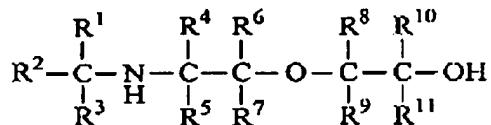
or mixtures thereof, which is then aminated with an alkylamine of the formula



wherein  $\text{R}^1$ ,  $\text{R}^2$ , and  $\text{R}^3$  are as previously defined to yield



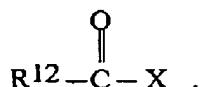
or mixtures thereof, which is then hydrolyzed with base to yield



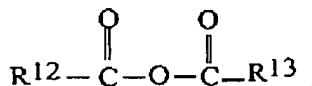
U.S. Serial No. 10/587,207  
 Amendment Under 37 CFR 1.312  
 Family Number: P2004J003

Page 5

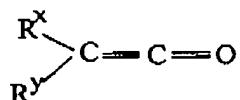
2. (original) The method of claim 1 for the synthesis of severely sterically hindered secondary aminoether alcohols using the acid halide of the formula



3. (original) The method of claim 1 for the synthesis of severely sterically hindered secondary aminoether alcohols using the organic carboxylic acid anhydride of the formula



4. (original) The method of claim 1 for the synthesis of severely sterically hindered secondary aminoether alcohols using ketene, of the formula



5. (previously amended) The method according to claim 1, 2, 3 or 4 wherein R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are methyl radicals.

6. (previously amended) The method according to claim 1, 2, 3 or 4 wherein R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, are hydrogen and R<sup>x</sup> and R<sup>y</sup> are hydrogen or phenyl.

7. (previously amended) The method according to claim 1, 2, 3 or 4 wherein R<sup>15</sup>, R<sup>16</sup>, R<sup>18</sup>, and R<sup>19</sup> are hydrogen and R<sup>17</sup> is hydrogen or methyl.

8. (previously amended) The method according to claim 1, 2, 3 or 4 wherein the base is selected from alkali metal hydroxide alkali metal alkoxide, alkali metal carbonate.

9. (previously amended) The method according to claim 1, 2, 3 or 4 wherein R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are methyl, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, and R<sup>11</sup> are

U.S. Serial No. 10/587,207  
Amendment Under 37 CFR 1.312  
Family Number: P2004J003

Page 6

hydrogen, R<sup>15</sup>, R<sup>16</sup>, R<sup>18</sup>, and R<sup>19</sup> are hydrogen, R<sup>17</sup> is hydrogen or methyl and R<sup>x</sup> and R<sup>y</sup> are hydrogen or phenyl.

10. (previously amended) The method of claim 1, 2, 3 or 4 wherein the acyl sulfonate is made by reacting organic carboxylic acid halide, organic carboxylic acid anhydride, ketene, mixtures of any two or of all three thereof with the organic sulfonic acid at a temperature in the range of about -20 to 150°C at a pressure between about 1 bar to 100 bars, the acyl sulfonate is reacted with dioxane to a dioxane to acyl sulfonate ratio of about 1:1 to about 10:1 at a temperature between about 50°C to about 200°C, the resulting cleavage product is reacted with alkyl amine in an amine to cleavage product sulfonate group ratio in the range of about stoichiometric to about 10:1 at a pressure of about atmospheric (1 bar) to about 100 bars, at a temperature of about 40° to about 200°C, and wherein the aminated product is hydrolyzed with base at between about 20°C to about 110°C.

11. (previously amended) The method of claim 1, 2, 3 or 4 wherein the mixing of the anhydride, acid halide, ketene or mixture of any two or of all three thereof, the organic sulfonic acid and the dioxane is combined in a single step, the reaction mixture being heated at a temperature between about 50°C to about 200°C to produce a cleavage product, the cleavage product and the alkylamine being reacted at an amine to cleavage product ratio ranging from about stoichiometric to about 10:1 at a pressure of about atmospheric (1 bar) to about 100 bars, at a temperature of about 40°C to about 200°C, and wherein the aminated product is hydrolyzed with base at between about 20°C to about 110°C.

12. (previously amended) The method of claim 1, 2, 3 or 4 wherein Q is 1.